

WHAT IS CLAIMED IS:

1. A valve assembly for sealed reception of an elongated object, which comprises:

a) a valve body defining at least one opening configured and dimensioned to permit entry of an elongated object and defining a central longitudinal axis; and

b) an elongated seal member having a resilient sealing structure defining an aperture in general alignment with the opening of the valve body, the aperture being configured and dimensioned such that upon insertion of the object into the aperture, the sealing structure resiliently engages the outer surface of the object in a tight manner, the sealing structure including a plurality of elongated bristle members attached to the seal member, the bristle members positioned to engage the elongated object upon at least partial insertion of the elongated object into the valve body, each bristle member adapted to be displaced relative to the longitudinal axis to facilitate expansion of the aperture of the seal member upon entry of the elongated object therein.

2. The valve assembly according to claim 1 wherein the valve body has a cylindrical shape and includes a proximal end portion defining a diameter which is less than the diameter of the remaining portion of the valve body and an inner peripheral ledge.

3. The valve assembly according to claim 1 wherein the elongated seal member rests upon a stabilizer plate when the seal member is disposed within the valve body.

4. The valve assembly according to claim 1 further comprising a seal housing which includes a central opening, a proximal cylindrical portion, a distal end face, and a distal outer flange having a scalloped surface to facilitate handling thereof.

5. The valve assembly according to claim 4 wherein the cylindrical portion is received within the valve body when the valve assembly is fully assembled.

6. The valve assembly according to claim 4 wherein the distal end face includes a peripheral groove and two opposed rib portion extending radially inwardly adjacent the groove for mounting the valve assembly to a cannula.

7. The valve assembly according to claim 1 wherein the plurality of bristle members include end portions disposed on a substrate.

8. The valve assembly according to claim 1 wherein the substrate is disposed on the inner surface of the seal member such that the bristle members are disposed radially from the longitudinal axis of the valve body.

9. The valve assembly according to claim 8 wherein the substrate is spirally arranged on the inner surface of the seal member.

10. The valve assembly according to claim 1 wherein the plurality of bristle members are arranged in a multi-array.

11. The valve assembly according to claim 1 wherein the sealing structure provides a seal having a predetermined leak rate less than or equal to 2mm of mercury in 20 seconds for instruments having a diameter in the range of about 4.5mm to about 13mm.

12. The valve assembly according to claim 4 wherein the seal housing and the seal member define therebetween a space to permit radial movement of the seal member within the seal housing.

13. The valve assembly according to claim 1 wherein the plurality of elongated bristle members form a taper having an angle less than 90 degrees with respect to the central longitudinal axis.

14. An apparatus for the introduction of elongated objects into the body of a patient while maintaining a seal between internal body portions and the outside atmosphere, which comprises:

a) a cannula assembly including a cannula housing and a cannula sleeve extending distally from the cannula housing; and

b) a valve assembly mounted to the cannula assembly, the valve assembly including:

i) a valve body defining at least one opening configured and dimensioned to permit entry of an elongated object and defining a central

longitudinal axis; and

ii) an elongated seal member having a resilient sealing structure defining an aperture in general alignment with the opening of the valve body, the aperture being configured and dimensioned such that insertion of the object into the aperture causes the resilient sealing structure defining the aperture to resiliently engage the outer surface of the object in a tight manner, the sealing structure including a plurality of bristle members attached to the seal member and concentrically arranged about the central longitudinal axis defined by the valve body and positioned to engage the elongated object upon insertion of the elongated object within the valve body, each bristle member adapted to be displaced upon contact with the elongated object to engage the seal member to expand the aperture.

15. The apparatus according to claim 14 wherein the valve body has a cylindrical shape and includes a proximal end portion defining a diameter which is less than the diameter of the remaining portion of the valve body and an inner peripheral ledge.

16. The apparatus according to claim 14 wherein the elongated seal member rests upon a stabilizer plate when the seal member is disposed within the valve body.

17. The apparatus according to claim 14 further comprising a seal housing which includes a central opening, a proximal cylindrical portion, a distal end face, and a distal outer flange having a scalloped surface to facilitate

handling thereof.

18. The apparatus according to claim 17 wherein the cylindrical portion is received within the valve body when the valve assembly is fully assembled.

19. The apparatus according to claim 17 wherein the distal end face includes a peripheral groove and two opposed rib portion extending radially inwardly adjacent the groove for mounting the valve assembly to a cannula.

20. The apparatus according to claim 14 wherein the plurality of bristle members include end portions disposed on a substrate.

21. The apparatus according to claim 14 wherein the substrate is disposed on the inner surface of the seal member such that the bristle members are disposed radially from the longitudinal axis of the valve body.

22. The apparatus according to claim 21 wherein the substrate is spirally arranged on the inner surface of the seal member.

23. The apparatus according to claim 14 wherein the plurality of bristle members are arranged in a multi-array.

24. The apparatus according to claim 14 wherein the sealing structure provides a seal having a predetermined leak rate less than or equal to 2mm of mercury in 20 seconds for instruments having a diameter in the range of about 4.5mm to about 13mm.

25. The apparatus according to claim 21 wherein the seal housing and the seal member define therebetween a space to permit radial movement of the seal member within the seal housing.

26. The apparatus according to claim 14 wherein the plurality of bristle members form a taper having an angle less than 90 degrees with respect to the central longitudinal axis of the valve body.